REMARKS

Applicants have studied the Office Action mailed April 21, 2006. It is respectfully submitted that the application, as amended, is in condition for allowance. Reconsideration and allowance of the pending claims in view of the following remarks is respectfully requested.

Rejection of claims 3 and 24-36 under 35 USC §101:

The Examiner rejected claims 3 and 24-36 under 35 USC §101 because the claimed invention is not supported by either a specific and substantial utility, a credible asserted utility, or a well established utility.

In making this rejection, the Examiner states, in part, that the utilities described in the specification are not considered to be specific and substantial because neither the specification nor any art of record teaches what the biological activities of SEQ ID NO:2 are, how they function, or a specific and well-established utility for SEQ ID NO:2 protein or antibody. The Examiner also states that the specification fails to teach what kind(s) of enzymatic reaction the protein carries out, and the instant specification does not disclose the nature of the substrate the instant SEQ ID NO:2 works on. The Examiner also states that the art generally acknowledges that function cannot be predicted based solely on structural similarity to a protein found in the sequence databases, and the Examiner cites several references in support of this position. The Examiner states that the specification does not teach a relationship to any specific disease or establish any involvement of SEQ ID NO:2 protein in the etiology of any specific disease, and the specification does not teach a relationship between the different tissue distribution of the cDNA SEQ ID NO:1 to any specific disease or etiology of any specific disease, either. The Examiner states that the specification does not teach what disease(s) is caused by malfunction of the claimed invention or the protein encoded by it. The Examiner concludes by stating that the instant claims are drawn to antibody to SEQ ID NO:2 which has undetermined function or biological significance, and until some actual and specific activity can be attributed to the protein identified in the specification as SEQ ID NO:2 or the polynucleotides encoding it, the claimed invention is incomplete.

Applicants respectfully traverse this rejection based on the following remarks.

The specification does specifically teach the biological activities of SEQ ID NO:2, the substrates that SEQ ID NO:2 is likely to work on, and the relationship of SEQ ID NO:2 to a specific disease. These teachings clearly demonstrate that the protein of SEQ ID NO:2, and antibodies thereto, is supported by specific and substantial utilities.

Furthermore, although the Examiner argues that the art generally acknowledges that function cannot be predicted based solely on structural similarity to a protein found in the sequence databases, in the instant case, SEQ ID NO:2 has an extremely high degree of structural similarity to a known protein and, in fact, may be an alternatively spliced variant of the known protein, and therefore the skilled artisan would expect that the functions and biological activities of SEQ ID NO:2 could accurately be inferred from the known protein. As stated on page 5 of the specification (lines 16-21), "The protein of the present invention shows a particularly high degree of similarity to Ras (and Rap) guanyl nucleotide releasing protein 2 (RASGRP2). Furthermore, the protein of the present invention may be an alternatively spliced variant of the protein provided in Genbank gi5031623. Specifically, the protein of the present invention has an additional 6 amino acids that are not present in the art-known protein of gi5031623 (see the amino acid sequence alignment in Figure 2)."

The specification states that Ras guanyl nucleotide releasing proteins, such as the protein of SEQ ID NO:2, can activate both Ras and Rap proteins, particularly by switching Ras/Rap from the inactive GDP-bound state to the active GTP-bound state (page 5 of the specification, lines 14-16). Thus, the expected biological activities of SEQ ID NO:2 and the substrates that SEQ ID NO:2 is likely to work on are specifically disclosed in the specification.

The specification also states that "RASGRP2 is thought to play a critical role in neuronal function by controlling the relative activation of Ras and Rap1 signaling induced by calcium and diacylglycerol; furthermore, this control may be important for Ras/Rap modulation of both normal and malignant conditions"(page 5, lines 22-25). The specification also states that "Expression of RasGRP2 has been observed to accelerate cell growth" (page 6, line 1). Thus, the relationship of SEQ ID NO:2 to specific diseases (e.g., nervous system disorders and malignant conditions and disorders of cell growth such as cancer) is disclosed in the specification.

The specification further states that "RasGRP is also expressed in T cells and links T-cell receptors and phospholipase C-gamma1 to RasErk signaling; importantly, this pathway is readily amenable to therapeutic intervention" (page 6, lines 3-5). Thus, the protein of SEQ ID NO:2 has

particularly important biomedical and commercial utilities because it is involved in a pathway that is readily amenable to therapeutic intervention, and antibodies to SEQ ID NO:2 would therefore be useful as therapeutic agents.

Accordingly, Applicants respectfully request that the rejection of claims 3 and 24-36 under 35 USC §101 be reconsidered and withdrawn.

Rejection of claims 3 and 24-36 under 35 USC §102(b):

The Examiner rejected claims 3 and 24-36 under 35 USC §102(b) as being anticipated by Hayward et al. (WO-98/53061-A1).

In making this rejection, the Examiner states that Hayward et al. teach an antibody that binds to a polypeptide that has 98.9% homology to the instant SEQ ID NO:2, and also teach a monoclonal or polyclonal antibody or fragments of antibodies such as Fab fragments, and further teach the antibody coupled to fluorescent compounds and a pharmaceutically acceptable carrier.

In response, Applicants respectfully assert that Hayward et al. does not anticipate claims 3 and 24-36.

The Examiner asserts, in effect, that the antibody taught by Hayward et al. will inherently cross-react and thus bind to the same polypeptides as the instantly claimed antibodies, thereby anticipating the instant claims. However, inherency may only be relied upon where the consequences of following the reference disclosure always necessarily results in the claimed invention. If there is not a reasonable certainty that the claimed subject matter will necessarily result, the rejection is not proper.

Specifically, in order for the antibody of Hayward et al. to inherently anticipate the instant claims, the antibody of Hayward et al. must necessarily selectively bind to the polypeptides recited in the instant claims (i.e., polypeptides comprising or consisting of SEQ ID NO:2). It is not sufficient that the antibody of Hayward et al. may possibly or probably bind to the polypeptides recited in the instant claims.

However, this "possibly or probably" standard appears to be the standard that the Examiner is relying on for the rejection of claims 3 and 24-36 under 35 USC §102(b). The Examiner has cited a reference which teaches an antibody that may possibly or probably selectively bind to polypeptides of SEQ ID NO:2 because the reference antibody binds to a polypeptide that has

98.9% homology to instant SEQ ID NO:2. This does not sufficiently demonstrate that the reference antibody must necessarily selectively bind to polypeptides of SEQ ID NO:2.

It is Applicant's position that the antibody of Hayward et al. does not necessarily selectively bind to polypeptides of SEQ ID NO:2 because different epitopes must necessarily exist in the polypeptide of SEQ ID NO:2 compared with the polypeptide of Hayward et al. because of the differences that exist in their amino acid sequences. For example, the amino acid sequence of instant SEQ ID NO:2 and the amino acid sequence of the polypeptide of Hayward et al. differ by at least 1.1%. Any epitopes that include any amino acid residues residing in this 1.1% portion of instant SEQ ID NO:2 that differs from the polypeptide of Hayward et al will serve to differentiate instant SEQ ID NO:2 from the polypeptide of Hayward et al. with respect to antibody recognition and specificity.

Therefore, the antibody taught by Hayward et al. does not necessarily cross-react with the same proteins (i.e., proteins comprising or consisting of SEQ ID NO:2) as the antibodies of claims 3 and 24-36.

Accordingly, Applicants respectfully request that the rejection of claims 3 and 24-36 under 35 USC §102(b) be reconsidered and withdrawn.

Conclusions

Claims 3 and 24-36 remain pending and under consideration. Claims 1-2 and 37-38 were withdrawn from consideration by the Examiner as being directed to non-elected subject matter.

In view of the above remarks, Applicants respectfully submit that the application and claims are in condition for allowance, and request that the Examiner reconsider and withdraw the rejections. If for any reason the Examiner finds the application other than in condition for allowance, the Examiner is invited to call the undersigned agent at (240) 453-3812 should the Examiner believe a telephone interview would advance prosecution of the application.

Respectfully submitted,
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